

Thrust & Air consumption of Cylinders



Air Pressure (kg/sq. cm) Cylinder Size (mm)	Thrust	3 kg/sq.cm Air Consumption	Thrust	5 kg/sq.cm Air Consumption	Thrust	7 kg/sq.cm Air Consumption	Thrust	10 kg/sq.cm Air Consumption
Piston Dia x Rod Dia	kgf	in Ltr/mm Stroke	kgf	in Ltr/mm Stroke	kgf	in Ltr/mm Stroke	kgf	in Ltr/mm Stroke
32 x 12								
Forward	21.70	0.00322	36.18	0.00483	50.65	0.00643	72.36	0.0088
Reverse	18.66	0.00244	31.09	0.00415	43.53	0.00553	62.19	0.0076
40 x 16								
Forward	33.92	0.00503	56.57	0.00754	79.2	0.01006	113.11	0.01383
Reverse	28.50	0.00422	47.50	0.00635	66.50	0.00844	95.01	0.01161
50 x 20								
Forward	53.00	0.0078	88.37	0.01178	123.71	0.0157	176.73	0.0216
Reverse	44.54	0.0066	74.23	0.0099	103.92	0.0132	148.46	0.0181
63x20								
Forward	84.14	0.0125	140.29	0.0187	196.41	0.02494	280.58	0.03429
Reverse	75.69	0.0112	126.14	0.0168	176.60	0.02243	252.30	0.03083
80x25								
Forward	135.73	0.0201	226.22	0.03015	316.71	0.0402	452.45	0.0553
Reverse	122.47	0.0181	204.12	0.02722	285.77	0.0362	408.26	0.0499
100x25								
Forward	212.00	0.0314	353.48	0.04713	494.87	0.0628	706.95	0.0864
Reverse	198.80	0.0295	331.38	0.04418	463.93	0.0589	662.76	0.0810

T = Thrust in kgf

D = Cylinder Bore dia in cm

d = Piston Rod dia in cm

P = Air Pressure in kg/sq.cm

0.9 = Frictional losses 10%

$$T = \frac{P \times \pi D^2}{4} \times 0.9$$

$$T = \frac{P \times \pi (D^2 - d^2)}{4} \times 0.9$$

C = Air Consumption - In Litres per 1 mm stroke of cylinder

$$C = \frac{\left(\frac{P+1}{1}\right) \times \frac{\pi D^2}{4}}{10000} = \text{Ltr/mm}$$

$$C = \frac{\left(\frac{P+1}{1}\right) \times \frac{\pi (D^2 - d^2)}{4}}{10000} = \text{Ltr/mm}$$

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Air pressure (kg/cm ²) Cylinder size (mm)	Thrust kgf	3 kg/cm ² Air consumption in Ltr./mm stroke	Thrust kgf	5 kg/cm ² Air consumption in Ltr./mm stroke	Thrust kgf	7 kg/cm ² Air consumption in Ltr./mm stroke	Thrust kgf	10 kg/cm ² Air consumption in Ltr./mm stroke
125 x 35								
Forward	331.38	0.04909	552.30	0.0736	773.22	0.09818	1104.60	0.13500
Reverse	305.40	0.04524	509.00	0.06786	712.60	0.09048	1018.00	0.12442
150 x 35								
Forward	477.19	0.07069	795.31	0.10604	1113.44	0.14139	1590.63	0.19441
Reverse	451.21	0.06684	752.01	0.10026	1052.82	0.13369	1504.03	0.18383
203.2 x 45								
Forward	875.70	0.12973	1459.50	0.19460	2043.30	0.25946	2919.01	0.35676
Reverse	832.75	0.12337	1387.92	0.185057	1943.09	0.24674	2775.85	0.33927
254 x 57								
Forward	1368.28	0.20270	2280.47	0.30406	3192.67	0.40541	4560.95	0.55745
Reverse	1299.38	0.19250	2165.63	0.28875	3031.88	0.38500	4331.26	0.52937
304.8 x 57								
Forward	1970.33	0.29186	3283.88	0.43785	4597.42	0.58380	6567.77	0.80272
Reverse	1901.42	0.28169	3169.04	0.42253	4436.66	0.56338	6338.09	0.77465

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P = Air Pressure in kg/sq.cm

0.9 = Frictional losses 10%

$$T = \frac{P \times \pi \times D^2}{4} \times 0.9 \quad \text{Forward}$$

$$T = \frac{P \times \pi \times (D^2 - d^2)}{4} \times 0.9 \quad \text{Reverse}$$

C = Air Consumption - In Litres per 1 mm stroke of cylinder

$$C = \frac{\left(\frac{P+1}{1}\right) \times \frac{\pi D^2}{4}}{10000} = \text{Ltr/mm} \quad \text{Forward}$$

$$C = \frac{\left(\frac{P+1}{1}\right) \times \frac{\pi (D^2 - d^2)}{4}}{10000} = \text{Ltr/mm} \quad \text{Reverse}$$

Heavy Duty Pneumatic Cylinders

Order code	Heavy duty cylinder + Piston dia + Stroke length + End cushioning position + Mounting
Medium	Compressed air (Filtered, Lubricated)
Design	Piston cylinder
Max. operating pressure	12 bar
Temperature range	-20°C to +80°C
Material	End Caps : C. I. Barrel - Seamless honed & hard chrome plated ● Piston rod : En8 ground & hard chrome plated ● Seals : Nitrile

All dimensions in mm unless otherwise specified

Note : Subject to change without prior notice